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ABSTRACT

This lesson plan presents activities designed to help students understand that Keiko, the killer whale, lived for a long time in an aquarium and had to be taught to live independently; and that computer users can get updates on how Keiko is doing. The main activity of the lesson involves middle school students working in small groups to produce a children's book (for children in grades 1 or 2). It includes objectives, materials, procedures, adaptations, discussion questions, evaluation methods, extension activities, annotations of suggested readings and web links, vocabulary, and related academic standards and benchmarks addressed in the lesson plan. The lesson plan also contains a description of a video clip related to the lesson, comprehension questions related to the video clip, and answers to those comprehension questions. (RS)

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TITLE OF LESSON PLAN: Keiko, Killer Whale

LENGTH OF LESSON: Two class periods

GRADE LEVEL: 6-8

SUBJECT AREA: Animals

CREDIT: Summer Productions, Inc.

OBJECTIVES: Students will understand the following:

1. Keiko is a killer whale who lived for a long time in an aquarium and had to be taught how to live independently. Keiko now resides in the part of the world he came from—Iceland.

2. Computer users can get Web updates about how Keiko is doing.

MATERIALS:

For this lesson, you will need:

Computer with Internet access

Variety of books made for children in grades one and two

Paper in a variety of colors and stocks (regular 20-pound paper, card stock, cardboard, etc.)

Markers

Old magazines for cutting out images

Stapler, yarn, or other book-binding material

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PROCEDURE:

1. By visiting the Web site of the Oregon Coast Aquarium in Newport, Oregon, you and your students can read about Keiko's history and get timely updates on Keiko's activities back in his home in Iceland. Go to http://www.aquarium.org/Keiko/ for Keiko News Central (alternatively, go to http://www.aquarium.org/ and click "Keiko").

2. As students become familiar with Keiko's history and his current lifestyle, challenge them to develop an idea for a children's book about Keiko. Review with the class the variety of books produced for children in the early grades:

- Picture books that tell stories
- Books of verse
- Books that include games, such as finding objects on a page

3. Ask students to point out a technique or device that authors use to hold a child's attention. Encourage students to notice the following:

- Colors in general
- Pictures—drawn, painted, or photographed
- Rhyme
- Repetition of words and sentences
- Requests for interaction, such as pointing to parts of the page

4. Building on the preceding class discussions, students can now work alone or in small groups to plan, write, and bind a book based on Keiko for a child in grade one or two. In the planning stage, students should come up with answers to questions such as the following:

- What category of book do I want to write?

- What do I want the child to learn about whales from my book?

- What techniques can I use to help the child learn?

5. Give students a chance not only to draft their children's books but also to share them with peers and then to revise and edit their manuscripts.

6. Encourage a variety of presentation formats—hand-lettered books, computer-generated books (with large print), books made of various weights of paper or cardboard, books with drawings, books with pictures cut out of other sources, books with photographs specifically taken by students or downloaded from the Keiko Web site. Remind students that books need titles. Offer students cover material and staplers, yarn, and other methods for binding the covers and the pages of the books.

7. Arrange reading-to-children times in a school or pediatric wing of a hospital. Remind students of how to read to children: sit close; adopt a tone of voice appropriate to the content; control volume and pace; and most of all, be patient, especially if a child has a question prompted by the book.

8. After the read-aloud sessions, hold a debriefing to discuss what students learned from reviewing the Web site, from producing their books, and from interacting with younger children.

ADAPTATIONS:

Give students a chance to produce more text-heavy books by having them write for an audience in grades three and four.

DISCUSSION QUESTIONS:

1. How do whales differ from fish?

2. Whales are believed to have evolved from land mammals. Discuss the ways they have become uniquely adapted to the marine environment.

3. Discuss the ways the artificial environment of an aquarium differs from the natural environment of the ocean. What difficulties might be encountered in the transport of a whale from one aquarium to another?

EVALUATION:

You can evaluate students' work using the following three-point rubric:

Three points: unified, coherent, and age-appropriate text and pictures; error-free grammar, usage, and mechanics

Two points: mostly unified, coherent, and age-appropriate text and pictures; few errors in grammar, usage, and mechanics

One point: text lacking unity and coherence and, along with pictures, not age appropriate; many errors in grammar, usage, and mechanics

You can ask your students to contribute to the assessment rubric by determining what makes a text unified and coherent.

EXTENSION:

From Land to Water
The more we learn about whales, the better equipped we are to act responsibly on their behalf. Divide the class into groups, and have each group conduct research to discover how marine mammals have evolved to deal with problems of salt balance, temperature loss, buoyancy, streamlining to facilitate movement, reproduction, locating food, and navigating and communication. For example, how did marine mammals evolve to deal with the problem of swallowing food underwater without drowning? What unique biochemical and circulatory modifications enable sperm whales to remain underwater for as long as 90 minutes and to dive to depths of 4,000 meters?

Mammal Mobile
Get students to participate in creating mammal mobiles that demonstrate the relative sizes and shapes of different whales—for example, a bottlenose dolphin (12 feet long), an orca (32 feet long), a humpback (52 feet long), a right whale (52 feet long), a sperm whale (64 feet long), and a blue whale (104 feet long). Suggest that students also include a human diver (6 feet tall) in their mobiles.

SUGGESTED READINGS:

"Almost Home"
Kenneth Miller, Life, March 1996

"Orca"
Douglas Hand, Earthwatch, July/August 1994

WEB LINKS:

Keiko's Departure
This website is a joint venture between several USA schools and their counterparts in Iceland. Here you will find information and pictures relating to Keiko's move to the Westman Islands.
http://www.open.k12.or.us/kidlink/keiko/

Oregon Coast Aquarium
This is the home page of the aquarium where Keiko is living now.
http://www.aquarium.org/

VOCABULARY:

atrophy
To waste away or wither.
Context:
His dorsal fin had atrophied due to lack of exercise.

dorsal fin
The fin nearest to the back of a fish or mammal.
Context:
His dorsal fin had atrophied due to lack of exercise.

fjord
A long, narrow inlet from the sea, bordered by steep cliffs.
Context:
One proposal was that Keiko live in a fjord protected by a sea pen.

immune system
The body's essential defense mechanism--made up of white blood cells and antibodies--that fight off germs and disease.
Context:
His blood test revealed a weakened immune system.

mammals
A class of warm-blooded animals (including humans) that give birth to live young and feed their young with milk from the mother's body.
Context:
Orcas are air-breathing, warm-blooded, mammals.

orca
A type of whale known also as the "killer whale."
Context:
There are six orca families along the coast of Iceland.

pods
The name for family groups of whales, usually numbering from five to 12 members.
Context:
Their pods are split apart.

vocalizations
The articulation of sounds that occurs when air moves in and out of the whale's nasal sacs, producing the whale's "song."
Context:
Roger Payne is a world-renowned expert on whale vocalization and acoustic science.

ACADEMIC STANDARDS:

Grade Level: 6-8

Subject Area: life science

Standard: Understands how species depend on one another and on the environment for survival.

Benchmarks:
Knows that behavior is one kind of response an organism may make to an internal or environmental stimulus, and may be determined by heredity or from past experience, a behavioral response requires coordination and communication at many levels including cells, organ systems and whole organisms.

Grade Level: 6-8

Subject Area: technology

Standard: Understands the scientific enterprise.

Benchmarks:
Knows that individuals and teams have contributed and will continue to contribute to the scientific enterprise; doing science or engineering can be as simple as an individual conducting field studies or as complex as hundreds of people working on a single major scientific question or technological problem.

Grade Level: 9-12

Subject Area: life science

Standard: Understands how species depend on one another and on the environment for survival.

Benchmarks:
Knows that humans are increasingly modifying ecosystems as a result of population growth, technology, and consumption; human destruction of habitats through direct harvesting, pollution, atmospheric changes and other factors is threatening global stability, and if not addressed, ecosystems will be irreversibly damaged.

Grade Level: 9-12

Subject Area: life science

Standard: Understands how species depend on one another and on the environment for survival.

Benchmarks: Knows that progress in science and technology can relate to social issues and challenges.

Grade Level: 9-12

Subject Area: technology

Standard: Understands the nature of technological design.

Benchmarks: Knows that a solution and its consequences must be tested against the needs or criteria the solution was designed to meet.

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Video Information and Comprehension Questions

Video Description
Follow the real-life journey of Keiko, the killer whale who inspired the "Free Willy" films, as he leaves captivity in Mexico for a marine rehabilitation center at the Oregon Coast Aquarium. Learn how his captivity in an urban amusement park created chronic health problems that kept him from returning to his native Iceland.

View Video Clip | View Lesson Plan

Download Comprehension Questions & Answers

The Comprehension Questions are available to download as an RTF file. You can save the file to your desktop and open it in a word processing program.

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TITLE OF VIDEO:
The Free Willy Story: Keiko's Journey Home

VIDEO COMPREHENSION QUESTIONS:

1. Why are young orcas considered a valuable commodity?

2. What symptoms did Keiko have that indicated his health was failing?

3. How does the whale and dolphin rescue center differ from other parks?

4. What special precautions were taken to ensure a safe journey for Keiko?

5. How did Keiko's new home in Oregon resemble his natural environment?

6. How did scientists attempt to help Keiko locate his family?

7. Why was the fjord chosen as the best place to release Keiko into the wild?

8. What was the most important skill Keiko had to learn before he could be released in the wild?

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The Free Willy Story: Keiko's Journey Home

VIDEO COMPREHENSION QUESTIONS AND ANSWERS:

1. Why are young orcas considered a valuable commodity?
Young killer whales are considered a valuable commodity because they are easy to handle, train, and transport.

2. What symptoms did Keiko have that indicated his health was failing?
A skin rash, atrophied dorsal fin and an abnormal blood test were indicators of Keiko's failing health.

3. How does the whale and dolphin rescue center differ from other parks?
Staffed with trainers and veterinarians, the whale and dolphin rescue center emphasizes rehabilitation of wildlife, rather than performance or entertainment.

4. What special precautions were taken to ensure a safe journey for Keiko?
Special precautions such as monitoring vital signs, cooling the water and using moisture cream were taken to ensure Keiko's safe journey.

5. How did Keiko's new home in Oregon resemble his natural environment?
Keiko's new environment was larger and colder than his tank in Mexico. It also had natural rock formations, random currents and natural acoustics to simulate the wild ocean habitat.

6. How did scientists attempt to help Keiko locate his family?
By comparing voice prints of Keiko to recordings of known orca families on a spectrograph, scientists attempted to locate Keiko's family.

7. Why was the fjord chosen as the best place to release Keiko into the wild?
The fjord was chosen for Keiko's release because the protected waters were on an orca migration route, and Keiko could hear and respond to others of his own kind.

8. What was the most important skill Keiko had to learn before he could be released in the wild?

The most important skill Keiko had to learn was how to locate and hunt for food.

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